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EXPLORATIONS IN THE BENI PROVINCE.

BY

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I first went to Bolivia in the year 1866 to take possession, after discovery, of the guano deposits of Mexilones and, in La Paz, I met the Count de la Ribbete, who was then at the head of the Mineral School of Bolivia ; and, having in his possession all the documents and records, as well of the Indians as of the Spaniards, he told me about the legendary treasures and the gold carrying streams forming the river Beni, insisting more particularly on the richness of the river Tipuani.

The last of the modern workers of these rich deposits had been Mr. Villamil and Mr. Saballa. Both had extracted large amounts of gold, but at their death the works ceased. The Indians, finding no more employment, and having no means of living, abandoned that region, which once more became a desert.

I had then no time to undertake this exploration ; but determined to do it as soon as circumstances allowed.

Things remained in that state for twenty years, and I returned to La Paz in 1886. There I met a descendant of Villamil who represented the rights of his family and claimed possession of the old Villamil gold diggings

on the Tipuani. A Mr. Leclerc, a poor old dentist, also claimed possession of Cuebaplaya, Chuchipaya and Churumani on the same river.

A German company, formed by shop-keepers in Sorata, was in nominal possession of Isquisivi, located in front of Chuchipaya. But all these people, being thoroughly ignorant and incompetent, lost their small capital, and abandoned the work.

Still, the legends concerning the fabulous wealth of the Beni were confirmed by these men; and some thousand ounces of gold came from time to time to La Paz, brought in by peddlers from Sorata, who traded with the Lecco Indians.

The peddlers reported that the roads were mere Indian paths through the virgin forest, and that the rivers were not navigable, so that when I declared my intention of exploring personally all the old placers, and tracing a provisional map of the head waters of the Beni, every one in La Paz discouraged me.

The *alta planicie*, an immense plain extending from the lake Titicaca to the lake of Poopó, south of Oruro, is closed on the east by the majestic glaciers of the Andes, forming an uninterrupted barrier of ice. This is the core of the Andes. Three enormous peaks detach themselves from the chain. They are :

The Illampu, or Sorata, to the north, 24,000 feet elevation.

The Huama-Potosí in the centre, 23,000 feet elevation.

The Illimani to the south, 23,500 feet elevation.

After the loftiest peaks of the Himalayas, these are the highest mountains in the world.

The problem before me was, to find the best, the shortest and the cheapest route across that icy barrier, and into the Eldorado, on the east.

To be sure, there was a passage from Sorata to the east; a miserable mule path, traced in the most stupid and erratic way; but even that route only went as far as the cinchona plantations and ended at the village of Mapiri on the Mapiri river. The traveller had then to take his chance on a *balsa*, or raft, and float down the stream, in the midst of dangerous rapids. As for getting up stream, that was still more difficult, long, and perilous.

There must be another route; and I determined to find it. I felt convinced that I should come across the great gold placers of the Incas and of the Spaniards, and that the desert would be made once more to yield its treasure.

I had brought from England a drilling machine, and an engineer—Mr. N. C. Unfortunately, this gentleman did not fulfil my expectations and I had to send him home. I then undertook to explore personally all the different streams having their head waters in the eastern slope of the Andes, and contributing to form, by their junction, the Beni river. At the same time I traced a provisional map of these streams and of the gaps in the Andes, and kept a strict diary of all my observations.

Triangulation being impossible through the wild forest, the streams being deeply encased, and the horizon very limited, while I was obliged to cut every foot of the road with axe and cutlass, I limited my work to tracing the course of the rivers with compass and chain,

using the barometer for altitudes. I do not pretend that my map of the Beni is geographically exact ; but it is the only reliable one in existence.

Humboldt made no map of the great desert which he calls Misiones, and the fathers, Jesuit and Franciscan, have left none. Raimondi and Paz-Soldan, the two Peruvian geographers, penetrated no farther than the Purus river, and the province of Carabaya, and when we examine the pretended geographical maps of Bolivia, we find them to be without exception absolutely incorrect. We can only be astonished that the statesmen of this great country should have abandoned, up to the present time, its richest province. This abandonment is so complete that we may say there is no authority existing in these regions, and no tie between its inhabitants and the rest of the nation.

If you speak of Bolivia to a Lecco Indian or to a man from the Beni, the Madre de Dios, the Aten, or the Challana, they will tell you that they do not recognize a government which does nothing for them except to collect a personal contribution ; and yet that region begins at only seventy miles' distance from the capital, and is quite worthy of all the attention that can be bestowed upon it. All the rivers carry gold—all the lands are fertile beyond imagination. Its forests, now unexplored and unworked, furnish the most beautiful specimens of wood, and might at least give fuel to La Paz, the capital of the country, where the only fuel is dried animal manure.

A road to place the Beni in communication with La Paz would consolidate industrial enterprise, agriculture and commerce, which are now almost impossible for

want of means of transportation for the people and their machines and tools.

The study of these routes was the principal object of my explorations.

Some time ago the government named a commission to make a report on the practicability of the road. It was pronounced feasible ; but as this commission limited itself to following the Indian path, without any serious study of a project, and without having even traced a map to form the basis of such a study, I could make no use of their pretended exploration. I had, therefore, to construct provisional maps sufficiently accurate to lay down a projected route.

Two most important points are now determined :

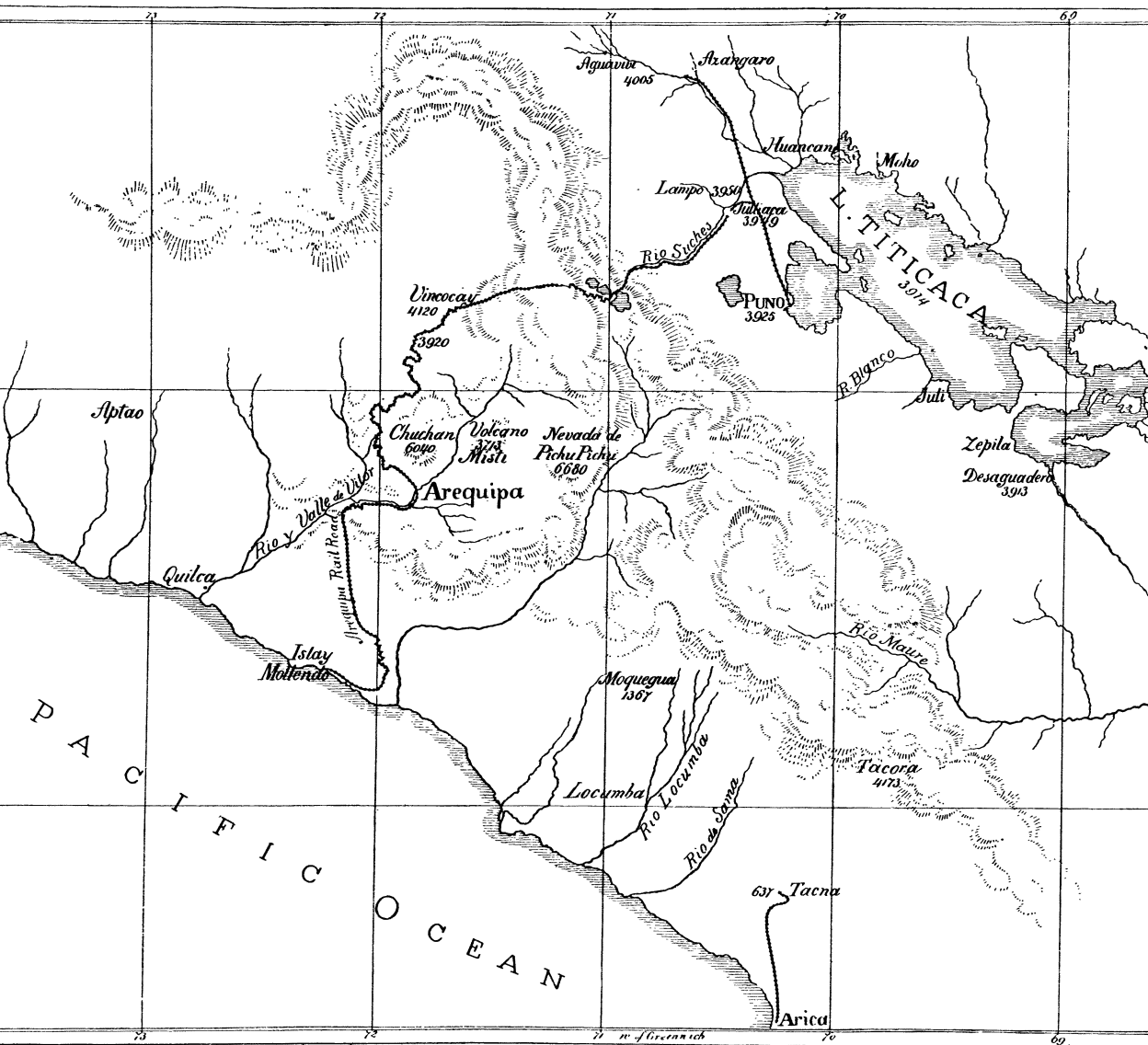
First : The execution of the road is easy, and its cost will be insignificant, when compared to the results it will give.

Second : That none of the existing paths can be used. The road must be cut across the forest, following as nearly as possible the course of the river, having thus a natural grade and avoiding costly constructions.

STUDY OF THE ROUTES EXISTING.

There are at present four routes from La Paz to the Beni.

First : The route by Sorata, Yani, Tola Pampa, Palmar, Mapiri and Huanai. This route is 560 kilometres (348 miles) in length, of which 216 (134 miles) are by water, during the months when the navigation of the Mapiri is possible. This road exists ; but it has been so absurdly traced and so badly made and is so much neglected, though the tolls are heavy, that it can



MAP

SHOWING THE APPROACHES TO LAKE TITICACA FROM THE OCEAN.

The altitudes are in metres: 32 metres=105 feet.

only be travelled with extreme discomfort and at great risk. Nevertheless, cargo mules are constantly going up and down to the calisaya plantations of Mapiri.

Second : The route by Coroico, with a length of 496 kilometres (308 miles), of which 132 (82 miles) are on a very decent cart-road. But the 364 (226 miles) remaining must be done by water ; and although navigation down stream is almost always practicable, it is not the same with the upward voyage, which is perilous, uncertain and very slow. The canalization of the Coroico so as to make it navigable would necessitate a very large expense.

Third : The route by Sorata, Kilapuni and Tipuani, like the preceding, is 496 kilometres (308 miles) long, but the unnecessary deviation to Sorata lengthens it by 165 kilometres. It has, moreover, like the road by Mapiri and Palmar, the great disadvantage that it is useless to the valleys of the Challana, the Songo and the Yolo-zani, which are far more fertile, rich and interesting than the Tipuani district. As it is, it is passable for mules with light loads, which must be removed in the perilous places. It would be easy to make this road serviceable ; it would cost less than the one by Mapiri, and would be free of toll-gate.

Fourth : There exists a wholly impracticable road, a mere Indian path ; and yet it leads in the only well-chosen direction. This is the road that I have proposed to study more thoroughly, taking La Paz as the basis for operation.

The commission above referred to, although it was right in selecting the Challana valley, made serious mistakes in the details, probably for want of time and

means to do the work in the right way. The surveyors laid down a very difficult line, abandoning completely the valleys of the Songo and the Yolozeni. The course of the latter is not even mentioned; and the great mistake they made, in respect to distances, proves that they were content with following the course of the Challana.

I suppose that the line traced by the commission through Penas and the northern part of Huama-Potosí has for its object to shorten the distance between lake Titicaca and the town of Sorata. This is an error. The time is not remote when La Paz will be in railway communication with the Pacific. The Northern Railroad by Arequipa and Puno, continued to La Paz by Sepita and Desaguadero, will do away with the insignificant navigation of the lake. It will diminish the rate of freight, now excessively high, and there will be no change of cars between the Pacific port of Mollendo and the capital of Bolivia.

Three railroads will eventually put La Paz in communication with the Pacific Ocean.

The northern, by Mollendo, Arequipa and Puno, will be extended along the western shore of lake Titicaca, passing by Sepita and Desaguadero.

The central one, by Arica and Tacna, will be extended by Tacora, the Maori river, San Andres and Viacha.

The southern, by Antofagasta, passing through the nitrate district, the Caracoles and Huanchaca silver mines, and Oruro, is now carried as far as Oruro, and will be completed to La Paz by the end of this year.

La Paz must become the commercial centre for the Beni trade. Sorata, with its very small commerce and industry, is in the hands of a few strangers who have

done nothing to promote the general prosperity ; and when the agricultural population communicates directly with La Paz, and the Pacific, it will not regret the loss of these little shops and their ruinous prices.

For the present, until the railroads are completed to La Paz, and the government undertakes the construction of the Challana road, which I have advocated, the easiest, shortest and cheapest way is the following :

The Arequipa railroad strikes lake Titicaca at a place called Juliaca, where it branches, on the south to Puno, and on the north toward Cuzco, the great capital of the Indian kings in Peru.

Juliaca is a very thriving little village, and the railroad to Cuzco, begun by Mr. Meiggs, is now being completed by Mr. Morris, another American engineer.

From Juliaca to the Mapiri river there is a very good mule path on level ground. This might be very easily transformed into a cart-road, along the northern shore of the lake, passing by Taraco, Huancané, and Moho, to Huaichu, a distance from Juliaca of 162 kilometres (101 miles). Huaichu is on the frontier of Peru and Bolivia, and is situated not far from the Mapiri river, the course of which could be followed down to its junction with the Camata, at which point the Mapiri begins to be navigable. The advantages of this route are that it does away with the perilous crossing of the Andes at Sorata, and saves nearly 150 kilometres (93 miles) in distance.

There is no difficulty in finding labor on the western side of the Andes, and on the eastern side the laboring population would very soon increase if there was steady employment. Other conditions are favorable.

The climate of the Beni, which lies between 14° and 16° latitude south, is tropical, with a rainy and a dry season; the soil is of extraordinary fertility, and there is every variety of animal, wild and domestic. Food is abundant. An ox costs in Reyes from four to five dollars; a sheep can be bought in Huanai for \$1.20; a good mule costs \$60, and a llama from one to three dollars. Pigs, and poultry of every description are abundant and cheap. There are two crops of rice and corn in the year; the banana gives fruit eight months after planting; the sugar cane grows fifteen feet high, and every kind of fruit and vegetable can be raised. Cotton and gum grow wild.

The predominating Indian race is that of the Leccos. They are white, tall, well formed and lazy. The men shoot, fish and man the rafts on the river, and cultivate just enough corn, rice and potatoes to last them for the season. The women cook, make clothes, spin the cotton, dye it and weave some very clever fabrics. Their language is entirely different from the Quichua, the Aymará or the Spanish.

They all wash gold, and the women are particularly skilful in the management of the *batea*, or miner's wooden pan.

The gold gravel extends over such a vast territory and is sometimes found in such enormous deposits, that it is practically impossible to estimate the amount of gold that could be obtained by hydraulic process. The metal is in a very fine laminated state, and gold gravel is easily disintegrated. Very few boulders of large size are found, and there is any amount of dump and water head. Timber for building purposes abounds.

Much has been said of the unhealthiness of the Beni province, and the death of many of my followers seems to confirm the statement. It is nevertheless untrue.

In some of the old works, especially those on the Tipuani river, the pits and deposits made to accumulate water, not having been cleaned or drained for many years, have become pestilential swamps, filled with stagnant water and vegetable matter in a state of decomposition. The Indians avoid the neighborhood of such swamps and live on the higher places. When I discovered Tuttlemondi, I found a large swamp of the kind on top of a gold gravel; but I drained it to the bottom by a trench, and planted sugar cane and banana trees, and the place became perfectly healthy.

Another cause of sickness is the intemperance and the carelessness of the immigrants. The climate being warm, they are thirsty, and drink the water of the main rivers or of the little streams that wash the forests, in which dead leaves and dead insects are constantly decomposing. Such waters contain animalculæ and produce a swelling of the stomach very similar to dropsy. At other times the men drink to excess of rum and also eat fruit immoderately, with the natural consequences; but I believe that this region is as healthy as any tropical climate can be, and will lose its malarious effect as soon as the forests are partially cleared for agriculture or mining purposes, and some little drainage is made in the swampy grounds.

I have made five different explorations of the Beni in five years, sojourning each year, and at different seasons, for months at a time. In one expedition, I had with me a daughter only sixteen years of age. In the year

1889 the wife and daughter of Mr. Martindale, the engineer, remained for eight months in Tuttlemondi, the young lady being only fourteen years of age, and we all liked the country and agreed that it would be a most charming place to live in, with a comfortable house, such as we had, and the necessities of life; and these are within reach.

There is, of course, a period of acclimatization for those who are new to the tropics. The insects are, at first, very troublesome and their bite often produces inflammation, but with a little patience, a real inoculation takes place, and the bites of mosquitoes and ants are no more to be dreaded.

DISTANCES BY THE DIFFERENT ROUTES.

COROICO ROUTE.		MAPIRI ROUTE.	
La Paz to Coroico	132	La Paz to Sorata.....	165
S. Pedro.....	165	Injenio	53
R. Yara.....	33	Tola	49
R. Songo	55	Palmar	33
R. Yolozeni.....	66	S. Agustin.....	28
Teoponte.....	45	Mapiri.....	16
		Huanai....	191
	496	Teoponte.....	25
			560
CHALLANA SONGO ROUTE.		TIPUANI ROUTE.	
La Paz to Cuticucho.....	55	La Paz to Sorata.....	165
Cosapa	16	Tusuaya	55
Hichuchaca	22	Capanaya.....	55
Harca	20	Kilapiluni.....	6
Parapara	35	Lajoya	5
Canaraya	12	Yaicoya.....	58
Hachila	27	Nairapi.....	38
Hupo	16	Tora.....	22
Puri	14	Tipuani.....	35
Palcapampa	12	Teoponte.....	56
Pahuma.....	7		
Ychucucho.....	27		
Siernes Ancoaque.....	28		
Teoponte.....	45		495
	336		